

CAPONIIDAE (ARACHNIDA, ARANEAE), A NEWLY RECORDED FAMILY FROM VIETNAM

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Abstract The family Caponiidae is reported for the first time from Vietnam. Two species including one newly recorded from Vietnam and one new species are diagnosed, described and illustrated: *Laconia saetosa* Platnick & Jäger, 2008 and *L. pseudosaetosa* sp. nov. The male palpal shape of these 2 species is essentially identical, but they can be distinguished by the male palpal bulb size differences. The t test results indicate that the male palpal bulb in *L. pseudosaetosa* sp. nov. is significantly smaller than it in *L. saetosa* ($P < 0.05$). These specimens were collected in three national parks (Cuc Phuong National Park, Cat Ba National Park and Tam Dao National Park) in Northern Vietnam.

Key words *Laconia*, Vietnam, eyes, palpal size, male palpal.

Caponiidae are cribellate haplogynes that differ from other spiders in lacking book lungs and having the posterior median spinnerets (PMS) anteriorly displaced to form a transverse row with the anterior lateral spinnerets (ALS). Caponiids are wandering hunters, typically found on the ground under rocks and in leaf litter.

Caponiidae comprises of two subfamilies: Nopinae and Caponinae. Nopinae is monophyletic, having obvious modifications such as those on the anterior distal leg segments. It is restricted to the New World and represented by Nops, Nopsides, Orthonops and Tarsonops. Caponinae is artificial, being supported only by the absence of obvious modifications (Platnick, 1995). Of its several included genera, two are primitive in retaining all eight eyes: *Caponia* from south Africa and *Caponia* from California (Platnick, 1993). Currently, Caponiidae contains thirteen genera including 7 monotypic genera and 72 species (Platnick, 2009). They are known mainly from North and South America, as well as Africa. Recently, Platnick & Jäger (2008) reported the first Asian Caponiid species (*L. saetosa*) and a new genus *Laconia* for it.

An extensive faunal survey of spiders from three national parks (Cuc Phuong National Park, Cat Ba National Park and Tam Dao National Park) in Vietnam over a period of one year using various collection techniques was carried out by the colleagues of the Chinese Academy of Sciences, some Caponiid spiders were collected by pitfall traps, of which two species including one new species and one newly

recorded from Vietnam were described and illustrated in the current paper.

Specimens were examined using a SZX12-Olympus stereomicroscope. Further details were studied under an Olympus BX51 compound microscope. All illustrations were made using a drawing tube and inked on ink jet plotter paper. Photos were made with an Olympus C7070 wide zoom digital camera (7.1 megapixels) mounted on an SZX12-Olympus dissecting scope. Genitalia were examined and illustrated after cleared in lactic acid.

All measurements were measured using a SZX12-Olympus stereomicroscope and given in millimeters. Leg measurements are shown as: total length (femur, patella, tibia, metatarsus, tarsus). Leg segments were measured on their dorsal side.

To obtain the difference of palpal bulb size between these two new species, we chose randomly 15 male individuals for each species and took photos of the left male palpal in both prolateral and retrolateral views for each individual (Figs 13-14), adjusted the photos in the same angle in each lateral view approximately, measured the height of cymbium (HOC) and the height of bulb (HOB) in each view (Fig 14). We also calculated the proportion of HOB to HOC (HOB/HOC) respectively. We first examined the distribution of the raw data by the Kolmogorov-Smirnov test in SPSS for windows (SPSS Inc USA). Then, we used an independent two-tailed t test to analyze for interspecies differences in HOB, HOC and HOB/HOC for each lateral view if the data were normally distributed, or the Mann-Whitney U

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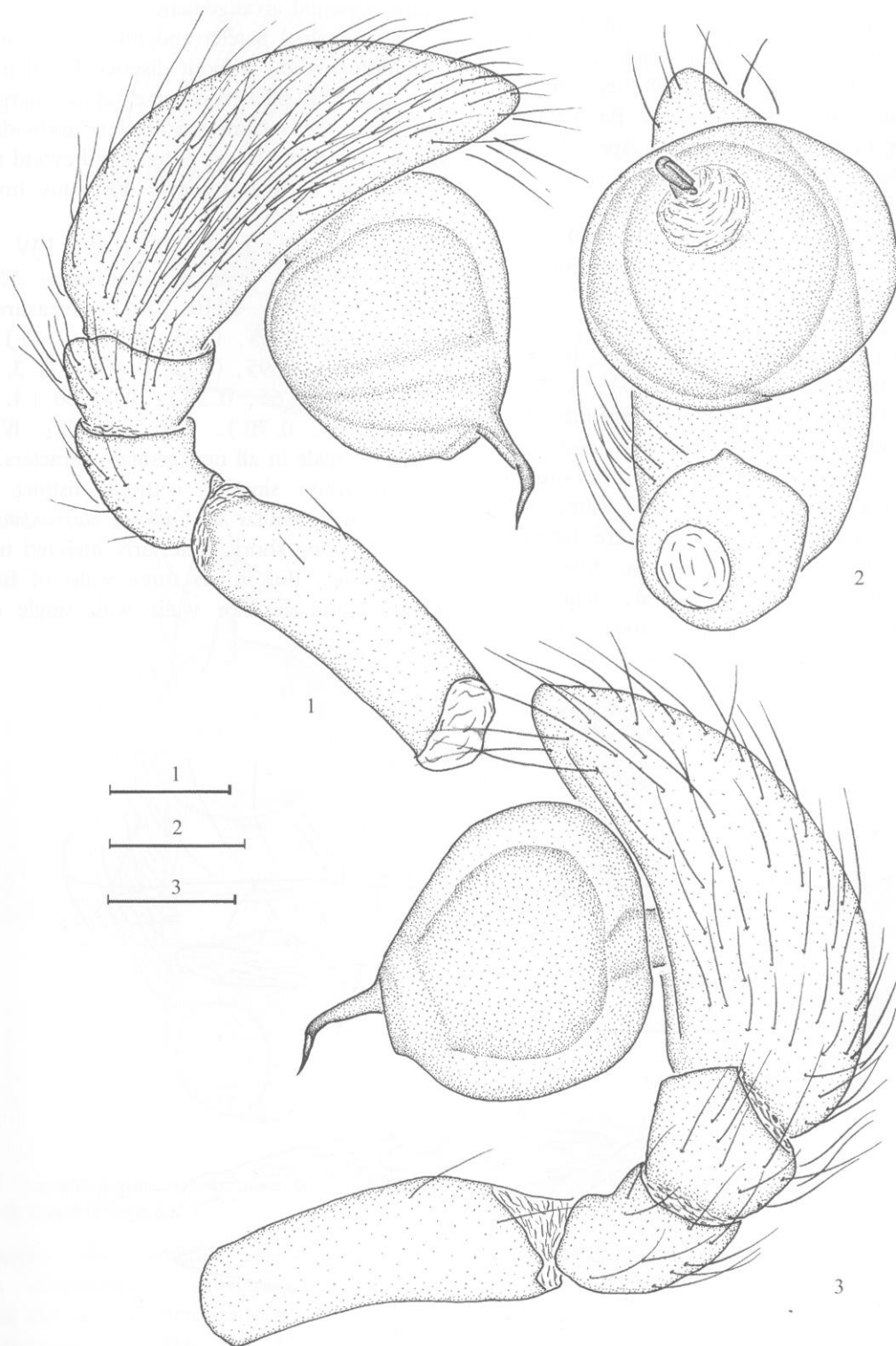
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test if the data were not normally distributed. All data were calculated and analyzed with SPSS 15.0 computer program (SPSS Inc. USA). The critical values were set at $\alpha = 0.05$.

Abbreviations AME-anterior median eyes, CH-

clypeus height, HOB-height of bulb, HOC-height of cymbium, OL-opisthosoma length, OW-opisthosoma width, PL-length of dorsal shield of prosoma, PW-width of dorsal shield of prosoma, TL-total length; , , , -leg etc



Figs. 1-3 *Laqonia saetosa* Platnick & Jäger, 2008. 1. Left palpus, prolateral view. 2. Left palpus, retrolateral view. 3. Left palpus, ventral view. Scale bars = 0.2 mm.

All types and materials are deposited in the Institute of Zoology, Chinese Academy of Sciences in Beijing (IZCAS).

Laoponia saetosa Platnick & Jäger, 2008 (Figs 1-5, 9, 11-12, 14)

Laoponia saetosa Platnick & Jäger, 2008: 99, figs 1-25, 31-34.

Material examined. 69 males and 46 females, Cuc Phuong National Park, Ninh Binh Province, Vietnam, 1 Apr. 2007 to 31 Mar. 2008, leg. PHAM Dinh-Sac; 7 males and 3 females, Cat Ba National Park, Hai Phong Province, Vietnam, 1 Apr. 2007 to 31 Mar. 2008, leg. PHAM, Dinh-Sac.

Diagnosis. See Platnick & Jäger (2008).

Description of male. TL 3.60, PL 1.50, PW 1.15, OL 2.10, OW 1.35. Eyes measurements: AME 0.13; AME-AME 0.03. CH 0.2. Leg measurements: 3.40 (1.10, 0.50, 0.80, 0.60, 0.40); 3.30 (1.05, 0.50, 0.75, 0.60, 0.40); 2.85 (0.85, 0.50, 0.55, 0.55, 0.40); 4.15 (1.20, 0.55, 1.00, 0.85, 0.55). Leg formula: - - -, legs without spines, metatarsi and tarsi entire, without subsegmentation or membranous processes, tarsi with three claws, paired claws with about 10 teeth, most distal of which are largest, unpaired claw without teeth, almost fused to protruding onychium. Carapace oval, flattened, abruptly narrowed opposite palpal coxae, foveae

distinct, long and narrow (Fig. 9).

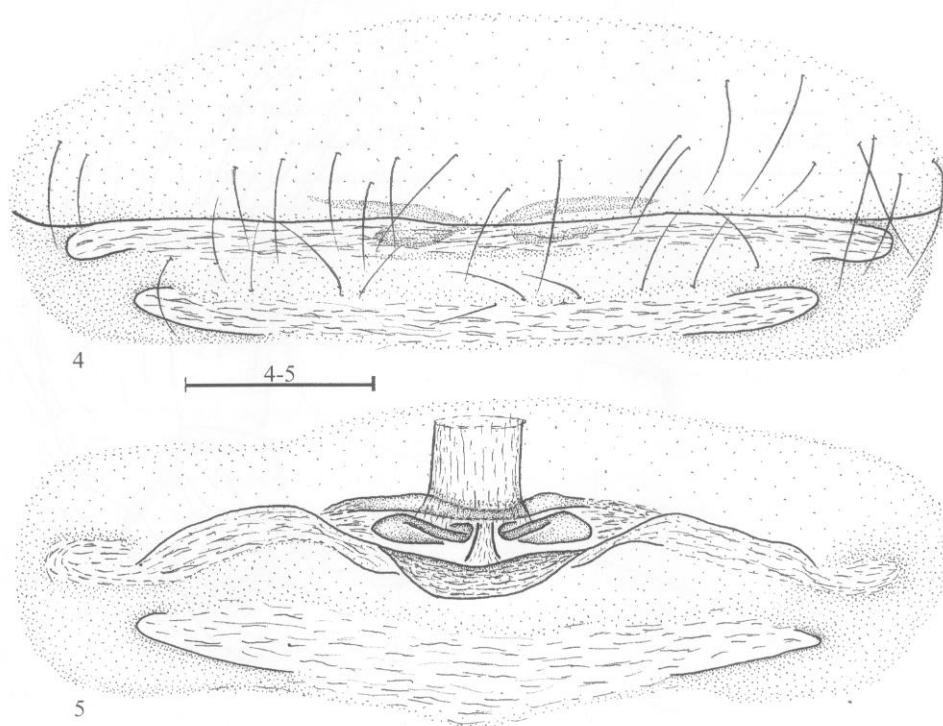
Chelicerae with median lamina; most of space between lamina and base of fang occupied by white membranous lobe.

Abdomen with two pairs of respiratory spiracles clustered around epigastric groove. Spinnerets in typical caponiid arrangement.

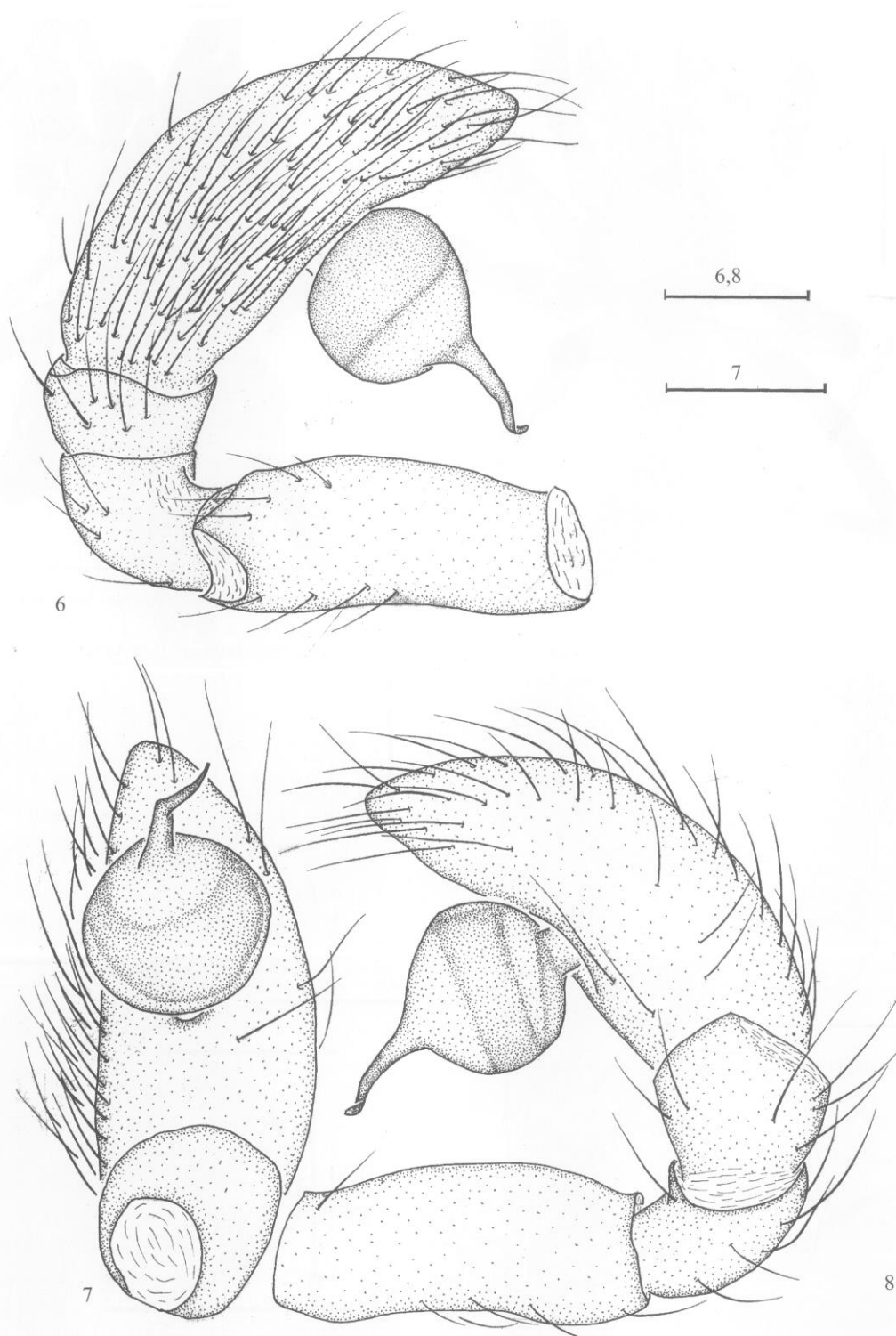
Male palpal patella and tibia short, unmodified. Cymbium ovoid, without distinct dorsal pad of short setae but with thickened setae on promargin in most individuals or retromargin in few individuals. Bulb global, extremely large, extending beyond the cymbial margins in a ventral view. Embolus tiny, distally twisted (Figs 1-3, 14).

Female. TL 4.00, PL 1.65, PW 1.35, OL 2.35, OW 1.40. Eyes measurements: AME 0.13; AME-AME 0.05. CH 0.28. Leg measurements: 4.10 (1.30, 0.65, 0.95, 0.75, 0.45); 3.95 (1.25, 0.60, 0.95, 0.75, 0.40); 3.40 (1.00, 0.55, 0.70, 0.65, 0.50); 5.00 (1.45, 0.65, 1.10, 1.10, 0.70). Leg formula: - - -. Similar to male in all non-genital characters.

Epigynum simple, without distinct structures. The vulva is similar to *Caponia harrisonfordi* Platnick, 1993 in having short, anteriorly directed tube leading to large sac. But it has three walls of bursa. Both posterior and anterior walls with single continuous



Figs. 4-5. *Laoponia saetosa* Platnick & Jäger, 2008. 4. Epigynum, ventral view. 5. Vulva, dorsal view. Scale bar = 0.2 mm.



Figs 6-8 *Laqonia pseudosaetosa* sp. nov. 6 Left palp, prolateral view. 7 Left palp, retrolateral view. 8 Left palp, ventral view. Scale bars = 0.2 mm.

Both posterior and anterior walls with single continuous sclerotization, invaginated at middle. Middle wall with pair of sclerotizations on either side of short membranous tube (Figs 4-5, 11-12).

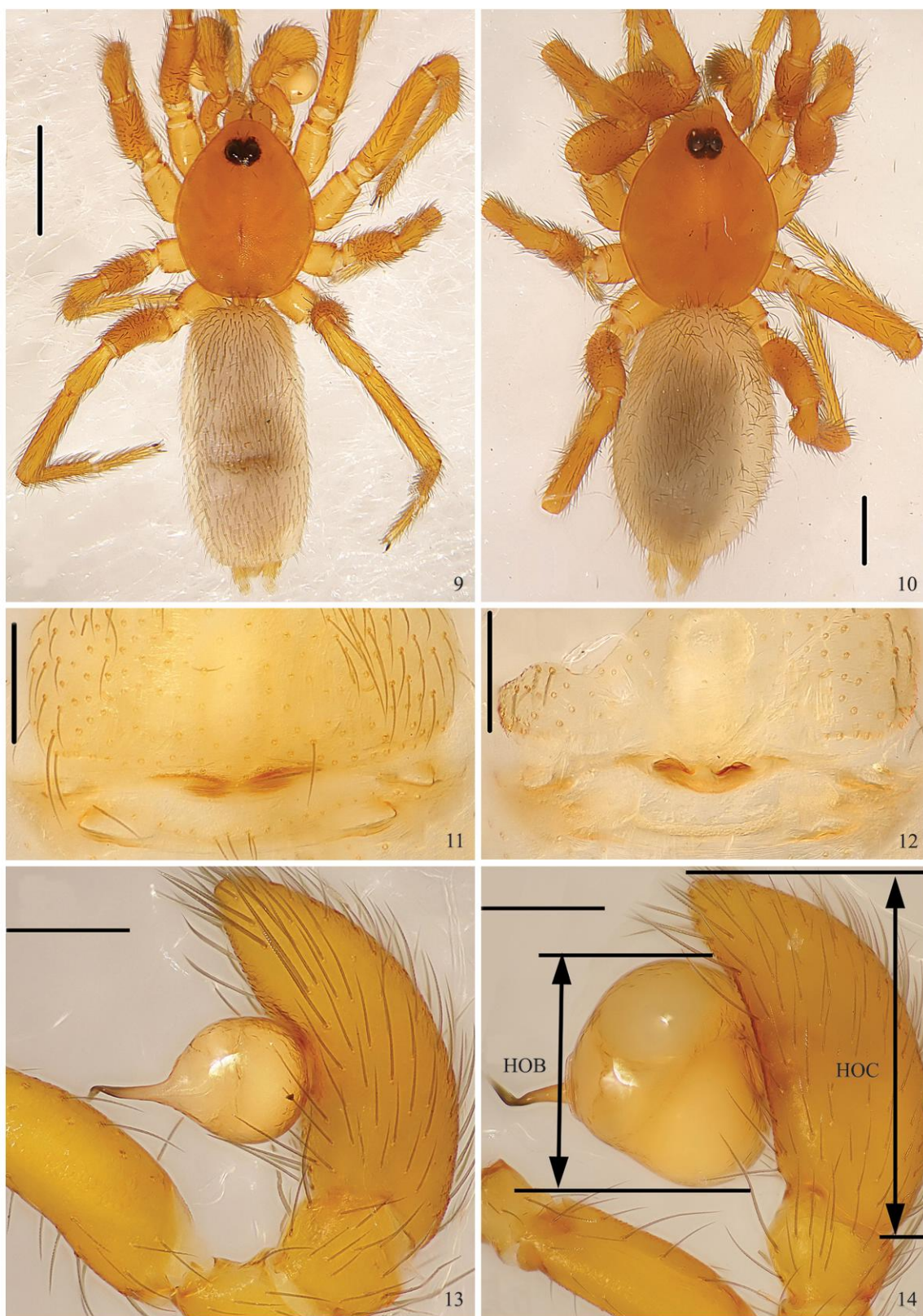
Distribution. Laos, Vietnam (Ninh Binh Province, Hai Phong Province).

Laqonia pseudosaetosa sp. nov. (Figs. 6-8, 10, 13)

Holotype male, 20 male paratypes, Tam Dao National Park, Vinh Phuc Province, Vietnam, 1 Apr 2007 to 31 Mar 2008, leg PHAM Dinh-Sac.

Etymology. The specific name refers to its similarity to *L. saetosa*.

Diagnosis. This new species resembles *L. saetosa*, can be distinguished from it by its significantly



Figs 9, 11-12, 14. *Laqonia saetosa* Platnick & Jäger, 2008. Figs 10, 13. *Laqonia pseudosaetosa* sp. nov. 9-10. Male habitus, dorsal view. 11. Epigynum, ventral view. 12. Vulva, dorsal view. 13-14. Male left palp, prolateral view. Scale bars: 9-10 = 1.0 mm, 11-14 = 0.2 mm.

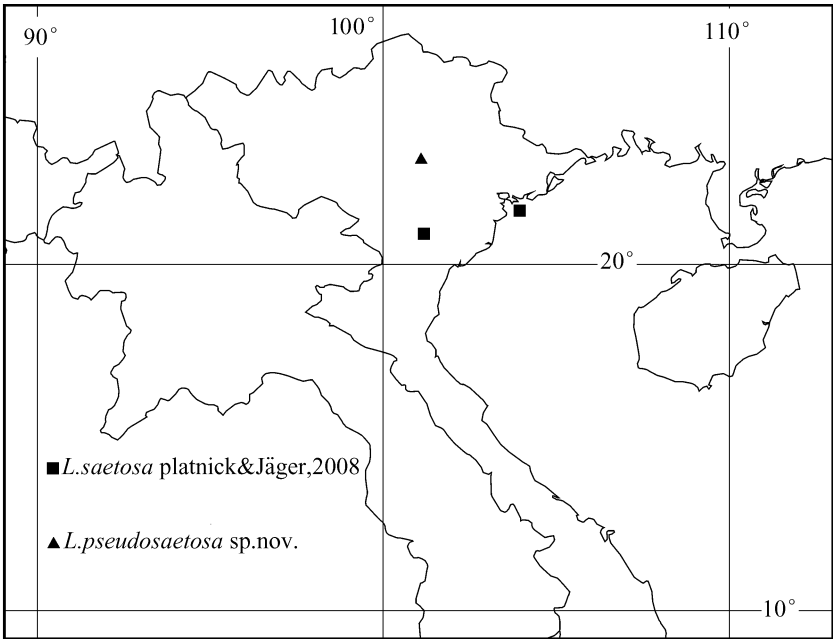


Fig. 15. Distributional map of the Laonia species in Vietnam.

Table 1. The difference of male palpal size between two Laonia species in Vietnam.*

		Species		Statistical Significance	
		Mean ±Standard deviation (N)			
		L. saetosa	L. pseudosaetosa	t	P
HOB	Pro lateral	0.31 ±0.02 (15)	0.19 ±0.01 (15)	18.89	0.00
	Retrolateral	0.31 ±0.02 (15)	0.18 ±0.02 (15)	18.29	0.00
HOC	Pro lateral	0.49 ±0.03 (15)	0.49 ±0.04 (15)	- 0.16	0.88
	Retrolateral	0.49 ±0.04 (15)	0.49 ±0.04 (15)	- 0.54	0.59
HOB /HOC	Pro lateral	0.64 ±0.04 (15)	0.38 ±0.02 (15)	20.29	0.00
	Retrolateral	0.63 ±0.04 (15)	0.37 ±0.03 (15)	21.08	0.00

* Kolmogorov-Smirnov tests suggesting all data were normally distributed (P>0.05).

smaller male palpal bulb (Figs 6-8, 13). But the t tests results suggest that the male palpal bulb of the new species is significantly smaller than it of L. saetosa (Table 1).

Description of male Male (holotype): TL 3.70, PL 1.60, PW 1.30; OL 2.10, OW 1.35. Eyes measurements: AME 0.13; AME-AME 0.05. CH 0.25. Leg measurements: 4.15 (1.25, 0.65, 0.90, 0.80, 0.55); 4.00 (1.25, 0.55, 0.95, 0.70, 0.55); 3.50 (1.05, 0.45, 0.70, 0.75, 0.55); 5.00 (1.40, 0.65, 1.15, 1.10, 0.70). Similar to L. saetosa in all non-genital characters (Fig 10).

Male palpal patella and tibia short, unmodified. Cymbium ovoid, without distinct dorsal pad of short setae but with thickened setae on promargin in most individuals or retromargin in few individuals. Bulb global, small, almost same wide as the cymbium in a

ventral view. Embolus tiny, distally twisted (Figs 6-8, 13).

Female. Unknown.
Distribution. Vietnam (Vinh Phuc Province).

REFERENCES

Platnick, N. I. 1993. A new genus of the spider family Caponiidae (Araneae, Haplogynae) from California. American Museum Novitates, 3063: 1-8.
Platnick, N. I. 1994. A revision of the spider genus Caponina (Araneae, Caponiidae). American Museum Novitates, 3100: 1-15.
Platnick, N. I. 1995. A revision of the spider genus Orthonops (Araneae, Caponiidae). American Museum Novitates, 3150: 1-18.
Platnick, N. I. and Jäger, P. 2008. On the first Asian spiders of the family Caponiidae (Araneae, Haplogynae), with notes on the African genus Diplogena. American Museum Novitates, 3634: 1-12.
Platnick, N. I. 2009. The World Spider Catalog, Version 10.0. American Museum of Natural History, online at <http://research.amnh.org/entomology/spiders/catalog/index.html> (accessed 26 July 2009).

开普蛛科 (蛛形纲, 蜘蛛目) 在越南的新纪录

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摘 要 报道了越南蜘蛛 1 新纪录科, 开普蛛科 Caponiidae, 描述了越南 1 新纪录种: 刚毛老挝蛛 *Laonia saetosa* Platnick & Jäger, 2008 和 1 新种: 拟刚毛老挝蛛 *L. pseudosaetosa* sp. nov.。这 2 个种的雄性触肢器的形状基本相同, 但是触肢器生殖球的大小差异十分显著, 该结构在拟刚毛老挝蛛中显著小于刚毛老挝蛛 ($P < 0.05$)。标本采集于越南北部的 3 个国家公园: 库风国家公园 (Cuc Phuong National Park), 吉婆岛国家公园 (Cat Ba National Park) 和三岛国家公园

(Tam Dao National Park)。

拟刚毛老挝蛛, 新种 *Laonia pseudosaetosa* sp. nov. (图 6 ~ 8, 10, 13)

正模, 副模 20, 越南永丰省三岛国家公园, 2007-04-01 至 2008-03-31, 范鼎颀采。

词源: 新种因生殖器结构与刚毛老挝蛛 *Laonia saetosa* Platnick & Jäger, 2008 相似而得此名。

关键词 老挝, 越南, 眼睛, 触肢器生殖球大小, 触肢器。

中图分类号 Q 959.226

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